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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/600,984

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Kurt R. Carlson

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EXAMINER

ZEMEL, IRINA SOPJIA

ART UNIT

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1796

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/600,984	Applicant(s) CARLSON ET AL.	
	Examiner Irina S. Zemel	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 December 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 7-13 and 16-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 14-15, 21-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102/103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-3 and 14-15,24, and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by EO 752603 to W.L. Gore and Associates (hereinafter "W.L. Gore") as evident form "Poisson's Ratio of Foamed Plastics" by Dement'ev et al., (hereinafter "Dement'ev").

The rejection stands as per reasons of record.

As discussed in the previous office action, the limitation relating to "introduction of the plurality of voids into the polymeric material effects a decrease in a bulk modulus of the polymeric material without substantially altering a Young's modulus of the polymeric material", the reference does not expressly addresses this step. However, since the method of introducing voids (via conventional blowing agent) is identical to one of the methods disclosed in the specification of the instant application, it is reasonable believed that this step is inherently met by the disclosure of the W.L. Gore reference. It is further reasonable believed that the modulus of elasticity of a material is not affected by the presence of voids, thus the claimed limitation of introduction of the plurality of voids into the polymeric material effects a decrease in a bulk modulus of the polymeric material without substantially altering a Young's modulus of the polymeric material" is a mere re-statement of an inherent effect of introduction of voids into a material. In addition, the fact that voids does not substantially affects the Yong's

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modulus of the material is clearly admitted by the applicants in their own disclosure on page 7, first paragraph. Specifically, the applicants state that "Since the voids 208 do not substantially alter the Young's modulus of the solid material 206, then it follows that a decrease in the Poisson's ratio results in a decrease in the bulk modulus of the polymeric material 204." (Emphasis added).

With respect to the newly added limitation of "wherein movement of a portion of the polymeric material is accommodated through compression of at least one of the voids, wherein the polymeric material with the voids has a lower Poisson's ratio than the polymeric material without voids, and wherein, since the voids do not substantially alter the Young's modulus of the solid material, a decrease in the Poisson's ratio results in a decrease in the bulk modulus of the polymeric material", once again this limitation of a mere re-statement of the inherent effects of introduction of voids onto a polymeric material. This limitation is also directly related to the limitation of "introduction of the plurality of voids into the polymeric material effects a decrease in a bulk modulus of the polymeric material without substantially altering a Young's modulus of the polymeric material" as it defines correlation between the bulk modulus, Young's modulus and Poisson's ratio. The inherency of this limitations is clear for an ordinary artisan since the Poisson's ratio for polymer foam is lower than Poisson's ratio of the underlying polymer for substantially all of the conventional polymer foams.

For example, as evident from the Dement'ev article, μ_f (or Poisson's ratio of foamed polymer), while is dependent on the foam density, is always lower than the μ (or Poisson's ratio of the polymer matrix) (whether the foam is isotropic or anisotropic).

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Therefore, the claimed limitations is inherently the property of virtually any polymeric based foam.

The burden is shifted to the applicants to provide factual evidence to the contrary

The invention as claimed, thus, is fully anticipated/obvious by the disclosure of the W.L. Gore reference.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-4, 15 and 21-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 660082 to Andrew A.G as evident form "Poisson's Ratio of Foamed Plastics" by Dement'ev et al., (hereinafter "Dement'ev").

The rejection stands as per reasons of record and discussion above regarding the limitation of "introduction of the plurality of voids into the polymeric material effects a decrease in a bulk modulus of the polymeric material without substantially altering a Young's modulus of the polymeric material" and the newly added limitation of "wherein movement of a portion of the polymeric material is accommodated through compression of at least one of the voids, wherein the polymeric material with the voids has a lower Poisson's ratio than the polymeric material without voids, and wherein, since the voids do not substantially alter the Young's modulus of the solid material, a decrease in the

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Poisson's ratio results in a decrease in the bulk modulus of the polymeric material" as being inherent in the prior art foams.

The burden is shifted to the applicants to provide factual evidence to the contrary.

The invention as claimed, thus, would have been obvious from the disclosure of the reference.

Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andrew A.G. in combination with US 5,706,175 to Takei (as evident form "Poisson's Ratio of Foamed Plastics" by Dement'ev et al., (hereinafter "Dement'ev")).

The rejection stands as per reasons of record and the discussion above applicable to the newly introduce limitations of the base claim 1.

Claims 1-3 and 15, 24, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO99/36820 to SUN Microsystems Inc., (hereinafter "SUN") in combination with US Patent 4,107,354 to Wilkenloh et al., (hereinafter Wilkenloh") or W.L. Gore (as evident form "Poisson's Ratio of Foamed Plastics" by Dement'ev et al., (hereinafter "Dement'ev"))).

The rejection stands as per reasons of record and discussion above regarding the limitation of of "introduction of the plurality of voids into the polymeric material effects a decrease in a bulk modulus of the polymeric material without substantially altering a Young's modulus of the polymeric material" and newly added limitation of "wherein movement of a portion of the polymeric material is accommodated through

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compression of at least one of the voids, wherein the polymeric material with the voids has a lower Poisson's ratio than the polymeric material without voids, and wherein, since the voids do not substantially alter the Young's modulus of the solid material, a decrease in the Poisson's ratio results in a decrease in the bulk modulus of the polymeric material", as being inherently met by the foams of prior art.

The burden is shifted to the applicants to provide factual evidence to the contrary.

The invention as claimed, thus, would have been obvious from the combined disclosure of the cited references.

Response to Arguments

Applicant's arguments filed 12-4-2009 have been fully considered but they are not persuasive. The **only** argument presented by the applicants is that none of the primary references, i.e., W.L.Gore (EO 752603), or Sun Microsystems (WO99/36829) or Andrews (EP 660082) disclose the limitation of "introduction of the plurality of voids into the polymeric material effects a decrease in a bulk modulus of the polymeric material without substantially altering a Young's modulus of the polymeric material". This arguments is repeated verbatim from the applicants' previous response. Similarly, the applicants state that the references do not disclose a newly added limitation of "wherein movement of a portion of the polymeric material is accommodated through compression of at least one of the voids, wherein the polymeric material with the voids has a lower Poisson's ratio than the polymeric material without voids, and wherein, since the voids do not substantially alter the Young's modulus of the solid material, a

decrease in the Poisson's ratio results in a decrease in the bulk modulus of the polymeric material”.

The examiner already addressed this arguments in the previous office actions. Once again, the examiner agrees that none of the cited references expressly disclose this limitation. However, as discussed in the previous office actions and as discussed above, lack of expressed disclosure of a limitation does not mean that the limitation is not inherently met by the disclosure of the reference. As previously discussed, since voids are introduced into polymeric materials via the same processes as disclosed In the specification i.e., via introducing microballons of via introducing gas bubbles using blowing agents, and in view of the applicants statement that “In a further example, the introduction of the voids 208 into the polymeric material 204 promotes the decrease in the bulk modulus without substantially altering a Young's modulus of the polymeric material 204” (without providing any specific details what the referenced “further example” may be), it is reasonable believed, as discussed above, that at least one or all of the methods disclosed in the primary references (which methods correspond to the method of void introduction disclosed in the instant specification), inherently result in the materials in which of “introduction of the plurality of voids into the polymeric material effects a decrease in a bulk modulus of the polymeric material without substantially altering a Young's modulus of the polymeric material”.

Further, as discussed above, the newly added limitation is also clearly inherent in virtually any polymeric foam since, as discussed above, the modulus of elasticity does

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not change for foamed material, while the Poisson's ratio decreases for foamed materials as compared to unfoamed polymeric matrix.

The invention as claimed, therefore, is still considered to have been unpatentable over the disclosures of the cited prior art references.

It is further expressly noted on the record, that the rejection under 112, first paragraph is withdrawn at this time since, as discussed above, it is reasonable believed that the claimed limitations of "introduction of the plurality of voids into the polymeric material effects a decrease in a bulk modulus of the polymeric material without substantially altering a Young's modulus of the polymeric material" and "wherein movement of a portion of the polymeric material is accommodated through compression of at least one of the voids, wherein the polymeric material with the voids has a lower Poisson's ratio than the polymeric material without voids, and wherein, since the voids do not substantially alter the Young's modulus of the solid material, a decrease in the Poisson's ratio results in a decrease in the bulk modulus of the polymeric material" as inherently met by the disclosure of the cited references (and any polymeric foam, in general).

However, should the applicants continue to present the arguments that the references do not inherently (not expressly) meet these limitations, the rejection under 112, first paragraph will be reinstated since, as discussed in the previous office actions, the invention as claimed is not enabled, as there is ABSOLUTELY no guidance which of the disclosed methods result on the products with the claimed properties. As previously noted while the Young's modulus and bulk modulus are discussed in the specification, it

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is discussed as some properties of material "in a further example", which example is not defined by ANY specific method of preparation of any specific polymeric materials.

Similarly, decrease in Poisson's ratio disclosed in the specification is NOT related to any specific methods or materials, rather it is a theoretical calculation. Thus, it is maintained, that if the claimed limitations are not inherent for foams disclosed in the cited references, the invention is not enabled for the materials of **the claimed properties**.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Irina S. Zemel whose telephone number is (571)272-0577. The examiner can normally be reached on Monday-Friday 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (571)272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/ Irina S. Zemel/
Primary Examiner, Art Unit 1796

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